



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,351	07/29/2003	Claes Gustafsson	MXGNP004X1/0311.310US	6357

30560 7590 03/28/2006

MAXYGEN, INC.  
INTELLECTUAL PROPERTY DEPARTMENT  
515 GALVESTON DRIVE  
RED WOOD CITY, CA 94063

EXAMINER

SKIBINSKY, ANNA

ART UNIT PAPER NUMBER

1631

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/629,351	Applicant(s) GUSTAFSSON ET AL.	
	Examiner Anna Skibinsky	Art Unit 1631	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-100 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-100 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

### **DETAILED ACTION**

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Claim 72 is missing in this claims set. Misnumbered claim 73 has been renumbered as 72. The Office action will refer to claims newly renumbered as 72-100.

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-26, 32-48 and 74-75 drawn to a method and computer program product for identifying amino acid residues comprising of the method step:

1. performing DOE to identify systematically varied sequences.

This group is classified in class 709, subclass 19

II. Claims 27 and 49, drawn to a method and computer program product for identifying amino acid residues comprising of the method step:

1. using proteins obtained by performing classical or synthetic DNA shuffling on nucleic acids encoding all or part of one or more naturally occurring parent proteins.

This group is classified in class 709, subclass 19.

- III. Claims 28, 29 and 50 drawn to a method and computer program product for identifying amino acid residues comprising of the method step:
1. identifying one or more sequences for use in a directed evolution procedure without performing mutagenesis or a recombination-based diversity generation mechanism (as in claim 20 or Group I).
- IV. Claims 30 and 51 drawn to a method of and computer program product for identifying amino acid residues comprising of the method step:
1. using a sequence activity model to rank residue positions or residue types at specific residue positions in order of impact on the desired activity and using the ranking to identify one or more amino acid residues
- V. Claims 31 and 52 drawn to a method for generating an optimized protein variant library comprising of the method step:
1. predicting which sequences provide desired activity and generating an **optimized** protein variant library
- VI. Claims 53-56 drawn to a method and computer program product for identifying members of a population of biopolymer sequence variants comprising the method step of:
1. identifying a Pareto front

VII. Claims 57-59 drawn to a method, computer system and product for predicting sequences that comprise desired properties comprising the method step of:

1. training a neural network with the population of selected artificially evolved sequences.

VIII. Claims 60-62 drawn to a method, computer system and product for predicting at least one property of at least one target polypeptide sequence comprising the method step of:

1. identifying one or more motifs common to two or more members of a population of polypeptide sequence variants.

IX. Claims 63 and 64 drawn to a system and computer program product for predicting sequence activities comprising:

1. providing a sequence activity plot and predicting at least one activity of at least one sequence from the plot.

X. Claims 65-71, 72, 73, drawn to a method, system and computer program product for producing libraries of desired sizes comprising the method step:

1. identifying one or more homologues of at least one initial polypeptide sequence resulting in generating a library of protein variants incorporating the set of evolutionary conserved variable amino acids.
- XI. Claims 76-81, drawn to a method and computer program product for identifying nucleotides for variation in nucleic acids comprising the steps of:
1. using the ranking to identify one or more nucleotides in the nucleotide sequence that are to be varied or fixed in order to impact the desired activity.
- XII. Claims 82-100 drawn to a method and computer program product for defining a library of biological molecules comprising the method steps of:
1. receiving an original set of data points representing activity and sequence of multiple biological molecules in a training set and constructing a bootstrap set of data points selected with replacement from the original set of data points.

Groups I-XII are directed to different subject matter as described above which are reasons sufficient to justify restriction. The groups are distinct and thus an undue search burden if they were searched together.

Inventions I to XII are directed to related methods. The related inventions are distinct if the inventions as claimed do not overlap in scope, i.e., are mutually exclusive; the inventions as claimed are not obvious variants; and the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect. See MPEP § 806.05(j).

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.


Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Skibinsky whose telephone number is (571) 272-4373. The examiner can normally be reached on 8 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel can be reached on (571) 272-0718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 3/20/06  
ARDIN H. MARSCHEL  
SUPERVISORY PATENT EXAMINER